January 31, 2006

Dan Landon, Executive Director, NCTC
101 Providence Mine Rd, Suite 102
Nevada City, CA 95959

RE: Roundabout Analysis at Idaho Maryland and E. Main St.

Dear Dan:

As per your request, I have completed some additional analysis to address various comments from Caltrans concerning the VISSIM results. Caltrans had suggested that we utilize a more recent count (August 28, 2002 count by PRISM Engineering) for the analysis of the roundabout, and to use appropriate growth rates to bring the 2002 count up to the Year 2012 conditions.

The Caltrans growth rate was determined by comparing data received from Caltrans[1] for the Year 2000 and the Year 2012, and finding that the yearly growth rate between data sets was 2%. We applied this 2% growth rate to the August 28, 2002 PRISM count for 10 years growth to determine a Year 2012" volume, which was then utilized in the VISSIM analysis. Table 1 shows the Year 2002 and 2012 growth projection from the PRISM count using a 2% growth rate at the Idaho Maryland/E. Main intersection. It should be noted that the NCTC traffic model has a growth rate of only 1.5%/yr in the same vicinity.

Table 1

	Idaho Maryland			SR 20/49 Offramp			E. Main St.			E. Main St.		
	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	SBR	SBT	SBL
2002	182	258	351	75	57	49	6	95	300	446	328	46
2012	222	315	428	92	70	60	7	116	366	544	400	56

source: PRISM Engineering

[1] This analysis used the traffic volumes produced by Caltrans' Travel Forecasting Section for the Dorsey Interchange project. These forecasts were based on counts taken in the Year 2000, even though they are labeled as Year 2002 counts in the Dorsey Drive Memorandum and Exhibits.

MICRO-SIMULATION MODEL RESULTS

We entered the alternative volumes shown in Table 1 for Year 2012 into the VISSIM model created in our original report and ran the simulation to get the traffic operations summary output.

Table 2
Five Minute Interval Delay Summary
From VISSIM Roundabout Model, Year 2012

	SR 20/49 Offramp		Idaho Maryland WB		E. Main St. SB		Bypass Lane		E. Main St. EB	
Time	Delay	#Veh	Delay	#Veh	Delay	#Veh	Delay	#Veh	Delay	#Veh
4:15 pm	2.7	17	8.5	54	12.6	36	5.2	38	5.8	31
4:20 pm	5.8	15	5.6	64	9.2	42	11	44	13.3	47
4:25 pm	6.5	25	9.6	53	14.4	39	4.5	55	14.1	39
4:30 pm	4.6	20	16.6	76	35.1	46	5	35	38.7	35
4:35 pm	6.8	20	16.2	63	24.5	35	4.4	47	43.9	50
4:40 pm	3.4	17	6.8	60	24.1	45	6.1	40	22.5	40
4:45 pm	3.9	18	3.6	66	5.3	29	8.5	48	5.7	38
4:50 pm	5.2	18	9.3	71	21.8	34	5.2	46	18.4	33
4:55 pm	8.7	16	4	52	11.5	43	6.1	52	14.2	43
5:00 pm	8.6	25	22.5	64	9.1	32	9.3	43	5.5	36
5:05 pm	7.3	14	10.6	59	8.4	38	5.3	46	11.4	42
5:10 pm	5.2	15	31.3	55	4.1	32	5.3	49	12.9	55
Total	**5.8**	**220**	**12.1**	**737**	**15.7**	**451**	**6.3**	**543**	**17.6**	**489**

Source: PRISM Engineering

As can be seen from Table 2, the average delays shown in the bottom "Total" row have a range from 5.8 seconds on the SR 20/49 offramp approach to a high of 17.6 seconds average delay for the E. Main Street EB Approach. These hourly averages are within the LOS C range.

Table 3 shows the average and maximum queue lengths expected from the same scenario in five minute intervals. Although some maximum queues for five minute intervals in Table 7 are large, the average and maximum queues for the hour shown on the bottom row are well within the existing constraints of the roadway system. Even the occasional maximum queue on Idaho Maryland Road of 685 feet is still 400 feet away from the SR 20/49 EB Ramps intersection. The distance from East Main Street to the SR 20/49 EB Ramps intersection is about 1,100 feet on Idaho Maryland Road. The roundabout maximum queues for Year 2012 are not expected to reach the ramps intersection on the east side of the freeway.

Table 3
Five Minute Queue Length Summary
From VISSIM Roundabout Model, Year 2012

	SR 20/49 Offramp		Idaho Maryland WB		E. Main St. SB		Bypass Lane		E. Main St. EB	
	Queue in Feet		Queue in Feet		Queue in Feet		Queue in Feet		Queue in Feet	
Time	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.
4:15 pm	2	46	11	137	28	177	4	85	8	73
4:20 pm	6	69	3	65	20	141	10	61	28	198
4:25 pm	11	90	34	331	45	198	0	35	33	220
4:30 pm	4	48	8	85	123	292	1	46	122	449
4:35 pm	11	97	82	526	63	221	1	45	185	444
4:40 pm	1	50	3	94	73	181	2	60	47	286
4:45 pm	4	66	8	214	4	87	3	63	5	72
4:50 pm	4	49	16	292	60	187	2	59	42	206
4:55 pm	10	115	4	140	14	181	0	17	32	195
5:00 pm	17	106	121	685	14	128	12	163	7	57
5:05 pm	7	73	4	52	11	113	2	75	21	119
5:10 pm	3	71	175	686	1	39	3	59	15	152
Total	**7**	**73**	**39**	**276**	**38**	**162**	**3**	**64**	**45**	**206**

Source: PRISM Engineering

It was not assumed that Scandling Avenue would relieve Idaho Maryland Road, in order to have a more "worst-case" analysis and to be conservative in estimates of queue lengths. If Scandling Avenue is used by motorists to avoid the occasional queues, then the queue lengths reported in Table 3 would be shorter for Idaho Maryland Road.

OnRamp Comparative Analysis

Table 4 was prepared to compare the results of projecting the August 28, 2002 PRISM Engineering count out to the Year 2012, with the actually Year 2004 onramp count. Care was taken to deemphasize the five minute intervals, and only the 15 minute intervals were compared (shown in red).

Table 4
Idaho Maryland Onramp Traffic Flow Comparisons

	4:15 pm	4:20 pm	4:25 pm	4:30 pm	4:35 pm	4:40 pm	4:45 pm	4:50 pm	4:55 pm	5:00 pm	5:05 pm	5:10 pm	Total
Year 2004	60	148	47	58	69	42	70	49	64	54	55	76	792
		255			168			184			185		
Year 2012	61	67	69	87	78	74	61	76	67	65	72	58	835
		197			239			204			195		

source: PRISM Engineering

As can be seen from the table, the peak 15 minute interval for the actual Year 2004 count was 255 vehicles per hour. When compared to the peak flow rate for the Year 2012 flow rate predicted by VISSIM, the VISSIM peak 15 minute rate is slightly lower at 239 vph. What this would indicate is that the roundabout is not expected to send heavier traffic flows onto the freeway above and beyond the existing condition, even through to the Year 2012.

If you have any questions, please do not hesitated to call.

Sincerely,

Grant Johnson
PRISM Engineering